RailKing
By M.T.H. Electric Trains

# F-3 ABA Diesel Locomotive Set

**OPERATOR'S MANUAL**




## Compatibility

This engine will operate on any traditional O-31 Gauge track system, including M.T.H.'s RealTrax® or ScaleTrax™ or traditional tubular track. It is also compatible with most standard AC transformers. (See page 22 for a complete list of compatible transformers and wiring instructions.)

DCS PROTO-SOUND 2 DIGITAL COMMAND SYSTEM

## Table of Contents

# Set Up

There are a couple of simple steps you must take before operating this RailKing Scale diesel.

1. Although the engine was lubricated at the factory, it is important that you lubricate the chassis before operation. Lightly grease the outside idler and drive gears marked "G" in Fig. 8 on pg. 13 with lithium-based grease to prevent them from squeaking and to prevent premature wear. Use light household oil and follow the lubrication points marked "L" in Fig. 7 on pg. 12. Do not over-oil. Use only a drop or two on each pivot point.

2. Prime the operating smoke unit with smoke fluid before operating. Add 15-20 drops of smoke fluid through the front smokestack (see Fig. 3 on pg. 10), then gently blow into the stack to eliminate any air bubbles in the fluid.

3. If you choose not to prime the unit with fluid, turn the smoke unit switch located under the engine to the OFF position (see Fig. 4 on pg. 10). **Running the engine without a primed smoke unit may cause damage.** See the "ProtoSmoke Unit Operation" section of this book for more information on smoke unit maintenance.

4. Place the engine on the track. Plug in the wiring harness between each unit (located underneath the couplers), then couple the unit together (see Fig. 1).

At this point, you are ready to begin running your engine.



*Figure 1. Connecting the Units Together.*

OPERATING INSTRUCTIONS

# Basic Operation

**Throttle** – Throttle up the power to your track. Give about 10-14 volts or enough power so that the engine's headlight shines brightly. Then put the engine into motion by either firmly pressing the Direction button on your transformer or remote once or dropping and advancing the throttle to put the engine in forward.

## Operation Buttons

Use the operation buttons on your transformer or remote as described below.

**Horn/Whistle** - To sound the horn, firmly press the Horn/Whistle button. The horn will sound for as long as you continue to depress the button. It will stop when you release the button. The horn has four different endings, depending on whether you hold the button for less than three seconds, three seconds, four seconds, or five seconds or longer.

**Bell** - To sound the bell, firmly press and release the Bell button. To turn the bell off, press and release the Bell button again. The bell will continue to ring from the time you turn it on until you press and release the button again to turn it off.

**Direction** – Your train is programmed to start in neutral. The first direction after neutral upon start-up is forward. Firmly press and release the Direction button to allow the engine to move forward. Just as you must stop your automobile between forward and reverse, this engine will not go directly from forward to reverse; it goes into neutral between directions. If the train has been moving forward, the first press of the Direction button will put the train from forward into neutral, the second press into reverse, the third press back into

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**Manual Volume Control** – To adjust the volume of all sounds made by this engine, turn the master volume control knob located under the engine clockwise to increase the volume and counter-clockwise to decrease the volume (see Fig. 2).

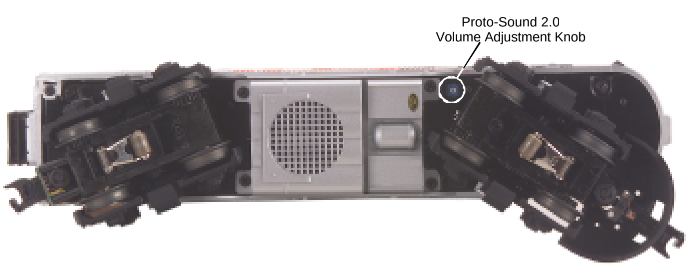



*Figure 2. Proto-Sound 2.0 Volume Adjustment Knob*

# Proto-Sound 2.0 Operating Instructions

**This manual contains the operating instructions for Proto-Sound 2.0 in conventional mode only. Instructions for accessing DCS command mode features accompany the DCS Remote Control System equipment.**

Because Proto-Sound 2.0 is an all-new system developed by M.T.H.'s own research and development team, it operates differently from original Proto-Sound. Most Proto-Sound 2.0 features are automatically enabled, and the reset state has been eliminated, so there is no need to program features as with original Proto-Sound. Although the new system is easier to operate than original Proto-Sound, you should read these instructions thoroughly before using Proto-Sound 2.0 features in order to prevent harm to yourself or your equipment.

## Activating Proto-Sound 2.0 Conventional Mode Features:

Proto-Sound 2.0 features are activated by sequences of Bell and Whistle button pushes described below. Please read the full descriptions of each feature before using it. To use these buttons to activate features rather than to blow the whistle or ring the bell, you should press the buttons for a shorter time (1/2 second); you may need to practice your timing to make this work smoothly.

| PSA Code Timing | | | | |
|---|---|---|---|---|
| Tap Bell Quickly | ½ Sec. Pause | Tap Whistle Quickly | ½ Sec. Pause | Tap Whistle Quickly |
| Total Time Lapse: 1 ½ Seconds | | | | |

| **Feature to Be Activated:** | **Button Code:** |
|---|---|
| Passenger Station Announcements | 1 Bell, 2 Whistles |
| Fire the Rear Coupler | 1 Bell, 3 Whistles |
| Fire the Front Coupler | 1 Bell, 4 Whistles |
| Speed Control On/Off | 1 Whistle, 2 Bells (from Neutral only) |
| Lock into a Direction/Unlock | 1 Whistle, 3 Bells |
| Reset to Factory Defaults | 1 Whistle, 5 Bells (from Neutral only) |

## Passenger Station Announcements (PSA):

Your engine is equipped with a sound package of passenger station announcements that you can play when you pull into a passenger station. **Each sequence described below will play as long as it is left on, randomly generating sounds, but be sure to allow approximately 30 seconds between the button pushes described below to allow the PSA sufficient time to run through each sequence.**

1. To cue the sound system to play the PSA, quickly but firmly press the Bell button once followed by 2 quick but firm presses of the Whistle button while the engine is moving. As soon as you have keyed in this code, you will hear the announcement for the upcoming stop and the bell will begin to ring.

2. Press the Direction button or drop and advance the throttle once to stop the engine. This will trigger the first sequence of PSA. The reverse unit is temporarily disabled so that the train will not move as you use the Direction button to trigger the sounds, and Proto-Sound 2.0 has disabled operator control over the Whistle and Bell buttons until the full PSA sequence is complete.

3. After waiting about 30 seconds for that sequence to run, press the Direction button again to trigger the second sequence of PSA.

4. After about 30 seconds, press the Direction button again to trigger the third PSA sequence.

5. Again, after allowing about 30 seconds for that sequence to run, press the Direction button one more time to trigger the fourth and final PSA sequence. You will know it is the final sequence when you hear the “All Aboard!” call. The bell will begin to chime and within a few seconds, the engine will start and move out on its own at the current throttle setting, in the same direction it was traveling when you began the sequence. Once the bell turns off, the operator regains control of the transformer’s bell and whistle buttons and can ring the bell or blow the whistle as usual.

## Tips on Using PSA

• You can terminate PSA at anytime by turning off power to the track for 15 seconds.

• You do not have to be in Forward to use PSA. At the conclusion of the full sequence, the train will pull away from the station in whatever direction you were going when you activated the feature.

• You can use PSA even if you are double-heading with another engine. If the second engine is not equipped with PSA at all, you must remember not to leave the throttle at a high voltage level once you have stopped the engine to run the PSA. Otherwise, the engine without PSA will begin vibrating on the track as its motors strain to move the train, since they cannot be automatically disabled during the PSA cycle. If the second engine is an original Proto-Sound engine equipped with PSA, you may choose to disable it when used in double-heading operations, so you will not experience competing PSA sounds. To disable PSA in an original Proto-Sound engine, see the operating instructions for that engine.

• PSA can be triggered from Neutral. It will operate the same as if triggered while in motion except that, at the conclusion of the PSA, the engine will depart in the next direction of travel, as opposed to the direction it was traveling before entering Neutral.

## Proto-Coupler® Operation

This locomotive is equipped with one coil-wound Proto-Coupler on the master A unit and one on the slave A unit for remote uncoupling action. Because the Proto-Coupler is controlled through the Proto-Sound 2.0 microprocessor, it does not require an uncoupling track section or modification to your layout to function. You can fire the coupler(s) from neutral or while in motion. Use the codes shown below (and in the chart on pg. 5) to fire the coupler(s).

**Rear Coupler:**

To fire the rear coupler, press the Bell button once followed immediately by three pushes of the Whistle button. The sound of the liftbar and air line depletion will play, and the knuckle will be released.

**Front Coupler:**

To fire the front coupler, press the Bell button once followed immediately by four pushes of the Whistle button. The sound of the liftbar and air line depletion will play, and the knuckle will be released.

## Speed Control:

M.T.H. engines equipped with Proto-Sound 2.0 have speed control capabilities that allow the engine to maintain a constant speed up and down grades and around curves, much like an automobile cruise control. You can add or drop cars on the run, and the engine will maintain the speed you set.

While the engine is programmed to start with the speed control feature activated, you can opt to turn it off. This means the engine's speed will fall as it labors up a hill and increase as it travels downward. It is also affected by the addition or releasing of cars while on the run. To maintain a constant speed when speed control is turned off, you need to adjust track voltage yourself. When speed control is off, the volume will drop to allow for better low voltage operation. Full volume is restored upon reactivation of speed control.

**To turn speed control on and off,** put the engine in neutral, then press the transformer's Whistle button one time then immediately press the Bell button two times. Two horn blasts will indicate that the engine has made the change. Repeat the 1 whistle, 2 bells code to return it to the other condition. **You will want to do this during the initial neutral upon start-up if you ever couple this engine to another engine that is not equipped with speed control to avoid damaging the motors in either engine.** Each time you shut down the engine completely, it will automatically turn speed control on.

## Lock into a Direction:

You can lock your engine into a direction (forward, neutral, or reverse) so that it will not change directions. To do this, put the engine into the direction you want (or into neutral to lock it into neutral), run it at a very slow crawl (as slowly as it will move without halting), and quickly but firmly tap the Horn button once followed by three quick taps of the Bell button, allowing approximately ½ second to lapse between each quick button press. Two horn blasts will indicate that the engine has made the change. The engine will not change direction (including going into neutral) until you repeat the 1 horn, 3 bells code to return the engine to its normal condition, even if the engine is kept without power for extended periods of time.

## Reset to Factory Defaults:

To override the settings you currently have assigned to the engine and reset it to its factory defaults, while in Neutral tap the Whistle button quickly once, followed by five quick taps of the Bell button, allowing approximately ½ second to lapse between each quick button press. Two horn blasts will indicate that the engine has made the change.

## Automatic Sounds:

Certain Proto-Sound 2.0 sound effects automatically play in programmed conventional mode conditions:

**Squealing Brakes** play any time the engine's speed decreases rapidly.

**Cab Chatter** plays at random intervals when the engine idles in neutral.

**Engine Start-up and Shut-down** sounds play when the engine is initially powered on or is powered off for five seconds or more.

# Maintenance

## ProtoSmoke® Unit Operation

This RailKing Scale diesel locomotive contains a Proto-Sound 2.0 controlled smoke unit that outputs smoke through the smokestack on the roof of the engine. The smoke unit is essentially a small heating element and wick that soaks up and then heats a mineral oil-based fluid that emits a harmless smoke. The smoke is then forced out of the stack by a small electric fan. Smoke volume is controlled by the Proto-Sound 2.0 system.

With a few easy maintenance steps, you should enjoy trouble-free smoke unit operation for years.

When preparing to run this engine, add 15-20 drops of smoke fluid through the front smokestack (see Fig. 3). We recommend M.T.H. ProtoSmoke, Seuthe, LGB, or LVTS fluids. Do not overfill the unit or the fluid may leak out and coat the interior engine components.

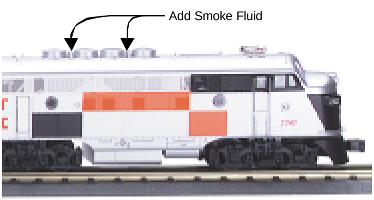



*Figure 3. Add Smoke through the Smokestacks*

If you choose not to add the fluid (or have already added the fluid but choose to run smoke-free), turn off the smoke unit switch located under the engine (see Fig. 4). **Failure either to add fluid to the unit or to turn it off may damage the smoke unit heating element and/or wicking material.**

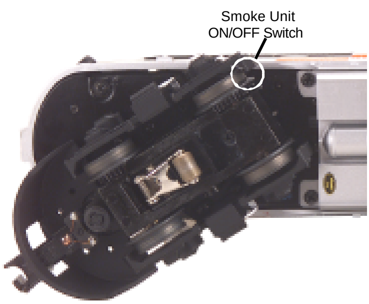



*Figure 4. Smoke Unit ON/OFF Switch*

When the smoke output begins to diminish, add another 10-15 drops of smoke fluid or turn the smoke unit off.

When storing the unit for long periods of time, you may want to add about 15 drops of fluid to prevent the wick from drying out.

After removing the engine from storage, add another 25 drops of fluid, letting the wick soak up the fluid for 15 minutes prior to operation.

If you experience poor or no smoke output when the smoke unit is on and has fluid, check the wick to see if it has become hard, blackened, and unabsorbent around the heating element. Remove the smoke unit inspection cover from the locomotive's body (see Fig. 5). After removing the chassis and inspection cover screws, lift the inspection plate away and inspect the wick. If it is darkly discolored and hard (see Fig. 6), it should be replaced.

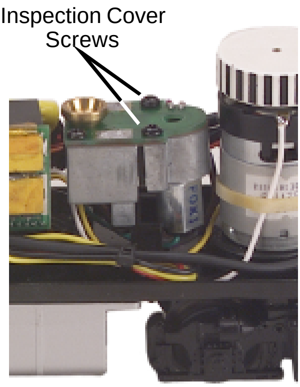



*Figure 5. Inspecting the Smoke Unit*

Replacement parts and wick replacement instructions are available directly from the M.T.H. Parts Department

phone: 410-381-2580;
e-mail: parts@mth-railking.com
mail: 7020 Columbia Gateway Drive, Columbia MD 21046-1532




*Figure 6. Examples of a wick in poor condition and in good condition.*

# Lubrication and Greasing Instructions

The engine should be well oiled and greased in order to run properly.

You should regularly lubricate the engine to prevent it from squeaking.  Use light household oil and follow the lubrication points marked “L” in Fig. 7.  Do not over-oil.  Use only a drop or two on each pivot point.

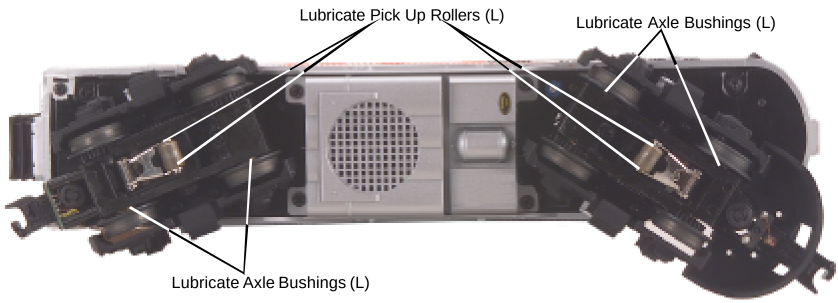



*Figure 7. Lubrication Points on the Locomotive*

The locomotive’s internal gearing was greased at the factory and should not need additional grease until after 50 hours of operation or one year, whichever comes first.  Follow the greasing instructions below.  Note that in some tightly packed engines you may need to move internal components temporarily in order to access the gears.

1. To access the gear box, remove the body from the chassis by unscrewing the chassis screws as seen in Fig. 8 on page 13 and lifting the body from the chassis.

2. Once the body is removed, remove the trucks by unscrewing the black Phillips motor mount screw located on the underside of the drive trucks (see Fig. 8 on pg. 13).

3. Once the motor mount screw has been removed, pull the motor away from the truck block and lightly coat the motor worm gear and bronze drive gear (in the truck block) with grease.

4. Reassemble the truck and motor, being careful not to pinch any wires between the truck block and motor mount.

5. After repeating the procedure for the other motor, reassmble the chassis and body, being careful that the wire harnesses are not caught between the chassis and body and reinstall the chassis screws.

Lubricate the outside truck block idler and drive gears with grease. Use the diagram shown in Fig. 8 below as a guide and add grease to the points marked with a “G.”

Periodically check the locomotive wheels and pickups for dirt and buildup, which can cause poor electrical contact and traction as well as prematurely wear out the neoprene traction tires.

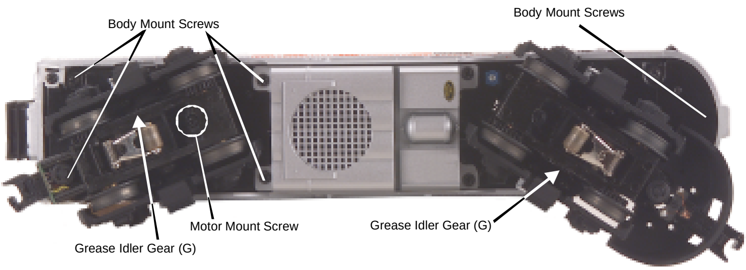



*Figure 8. Location of Body Mount Screws and Greasing Points on the Locomotive*

# Traction Tire Replacement Instructions

Your locomotive is equipped with two neoprene rubber traction tires on each powered truck block. While these tires are extremely durable, you may need to replace them at some point.

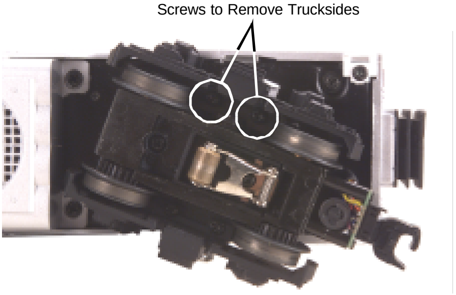



*Figure 9. Changing the traction tires on the front truck*

First, remove the truck sides from the truck block. To do this, turn your engine upside down. If there are visible Phillips screw heads between the truck frame and truck block (see Fig. 9), go to step A. If not, go to step B.

A. Remove the two Phillips screws that attach the truck sides to the truck block.

B. Remove the trucks from the chassis and the truck sides from the trucks in order to slip the new tire over the grooved drive wheel. See Fig. 9 for which screws you must remove to do this.

Once the truck sides have been removed:

1. Make sure the old tire has been completely removed from the groove in the drive wheel, using a razor blade or small flathead screwdriver to pry away any remains.

2. Slip the new tire onto the wheel. You may find it useful to use two small flathead screwdrivers to stretch the tire over the wheel.

3. If you twist the tire while stretching it over the wheel, you will need to remove and reinstall the tire. Otherwise your engine will wobble while operating.

4. Make sure the tire is fully seated inside the groove. Use a razor blade to trim away any excess tire that will not seat inside the groove properly.

5. Reassemble in the reverse order.

One set of replacement tires is packaged with your model. Additional sets are available directly from the M.T.H. Parts Department (phone: 410-381-2580; e-mail: parts@mth-railking.com; mail: 7020 Columbia Gateway Drive, Columbia MD 21046-1532).

# Headlight Replacement Instructions

The locomotive's headlight is controlled by a constant voltage circuit in the engine. The headlight is easy to remove and replace when it burns out. The bulb has a connector that attaches the bulb harness to a constant voltage board (see figure 10). Replacement bulbs are available directly from the M.T.H. Parts Department.

Follow the body removal instructions found in the Lubrication and Greasing Instructions.

Gently disconnect the bulb harness from the socket on the constant voltage circuit and replace the bulb.

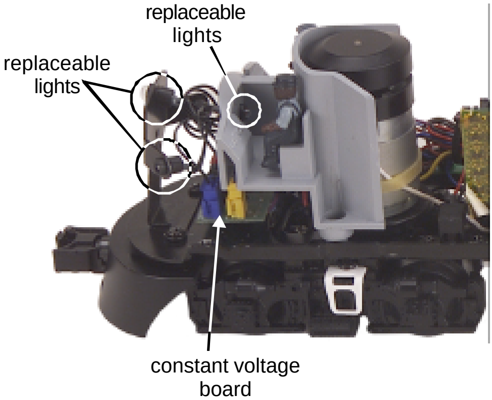



*Figure 10. Locations of Replacable Lights*

# Self-Charging Battery Back-Up

The special NiCad 7-cell 8.4v self-charging battery in this engine improves performance at any speed. It ensures that power to the sound system will remain on during directional changes, or when travelling over dirty track or switches. The self-charging battery system is automatically turned on or off whenever track power is turned on or off.

Track power (when applied) recharges the battery, which should last for up to five years. The special NiCad battery is a dry battery that should not leak or cause any damage to your engine. However, even this special battery will eventually wear down and need to be replaced, and **depending upon when your engine was built, it may need to be charged right out of the box.** When you notice that your engine sounds seem distorted or garbled at low voltages or become silent when power from the transformer is turned off, test the battery to determine whether it should be recharged or replaced.

**Test:** Put the engine in neutral and leave the track voltage at 10-12 volts (high enough for the lights to shine brightly and the engine to move steadily) for 15 minutes.

**Recharge:** If the sounds are improved at the end of the 15-minute test charge, the battery charge has run down and can be recharged. There are a number of ways you can do this:

• Use M.T.H.'s recharger (sold separately) that plugs into a wall outlet and a special port under the engine (see figure 11 on pg. 18)to recharge the battery overnight.

• Or Leave the engine in neutral with track voltage at 10-12 volts for 6-7 hours so the battery can fully recharge (if your engine has a smoke unit, be sure it is turned off).

• Or you can remove the battery (see figure 11 on pg. 18) and charge it in any standard slow charge battery recharger, following the recharger's directions.

**Replace:** If the sounds are not improved at the end of the 15-minute test charge, it is time to replace the battery (see figure 11 on pg. 18).

Contact the M.T.H. Parts Department (phone: 410-381-2580; e-mail: parts@mth-railking.com; mail: 7020 Columbia Gateway Drive, Columbia MD 21046-1532) for a replacement battery. A standard 9v alkaline battery can be substituted until your replacement arrives, but since alkaline batteries cannot be recharged, it will eventually wear down. Do NOT use a 6-cell 7.2v battery like those found in most convenience stores.

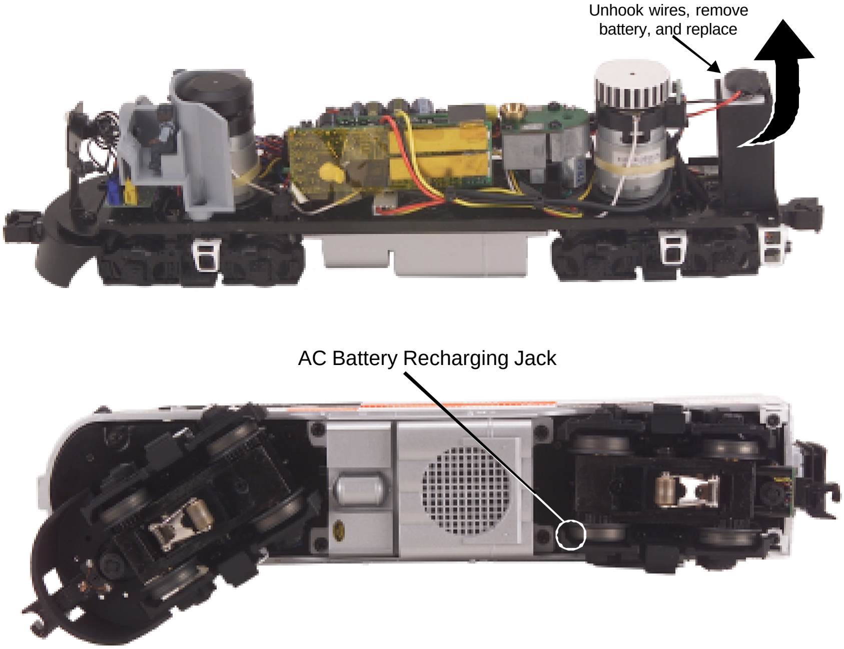



*Figure 11. Replacing the Battery and the Location of the Battery Re-charging Jack.*

# Troubleshooting Proto-Sound® 2.0 Problems

Although Proto-Sound 2.0 has been designed and engineered for ease of use, you may have some questions during initial operation. The following table should answer most questions. If your problem cannot be resolved with this table, contact M.T.H. for assistance (telephone: 410-381-2580; fax: 410-423-0009; e-mail: service@mth-railking.com; mail: 7020 Columbia Gateway Drive, Columbia MD 21046-1532).

| Starting Up | Remedy |
|---|---|
| When I first turn the power on, the engine will not begin to run. I have to turn the throttle off and then on again to get the engine to operate. | This is normal behavior. To prevent accidental high-speed start-ups, Proto-Sound 2.0 is programmed to start up in neutral anytime track power has been turned off for several seconds. See the "Basic Operation" section for more details. |
| **Horn** | **Remedy** |
| When I press the whistle button, the bell comes on instead. | Reverse the transformer leads. |
| I can’t get the horn to blow when I press the whistle button. | You may be pressing the button too quickly. Try pressing the whistle button more slowly, taking approximately one full second to fully depress the button. |
| **Bell** | **Remedy** |
| When I press the whistle button, the bell sounds. | Reverse the transformer leads. |
| I can’t get the bell to ring when I press the bell button. | You may be pressing the button too quickly. Try pressing the bell button more slowly, taking approximately one full second to fully depress the button. |
| The bell won’t work on a separate bell button. | Check the wiring of the separate button. |
| **Coupler** | **Remedy** |
| When I try to fire the coupler, PSA starts. | You are waiting too long between whistle button presses. |
| The Proto-Coupler won’t let the engine uncouple on the fly. | Try lubricating the coupler knuckle with a dry graphite lubricant. Do NOT use oil. |

| Cab Chatter | Remedy |
|---|---|
| Sometimes the Cab Chatter sounds don't play. | Cab Chatter plays only in neutral. |
| **Lock-out** | **Remedy** |
| I can't get the engine to run after I power up the transformer. It sits still with the engine sounds running. | The engine is locked into the neutral position. Follow the procedure in the "Lock into a Direction" section. |
| The engine won't lock into forward, neutral, or reverse. | Engine speed must be below 10 scale mph (approx. 10 volts or less in conventional mode). |
| **Volume** | **Remedy** |
| The sounds seem distorted, especially when the whistle or bell is activated. | Proto-Sound 2.0 volume is set too high. Turn the volume control knob on the bottom of the chassis counter-clockwise to reduce the volume. |
| **Battery** | **Remedy** |
| The engine will not leave the initial neutral setting | Check to be sure the battery is installed and fully charged. See the "Self-Charging Battery Back-Up" section. |
| I get no sounds when the engine shifts between directions. | The battery may be dead or need to be charged. See the "Self-Charging Battery Back-Up" section. |
| After I turn off my transformer, my engine continues to make sounds before quitting. | Proto-Sound 2.0 is designed to continue to sound for a few seconds after power to the track has been shut off. |
| **PSA** | **Remedy** |
| The PSA sounds occasionally repeat themselves. | Proto-Sound 2.0 has a built-in random number generator that randomly selects each sound clip to play. Because there are a limited number of sound clips available in each PSA sequence, it is probable that some of these sound clips will be repeated from time to time. |

| PSA | Remedy |
|---|---|
| Once in PSA, the engine doesn't go into reverse. | So that PSA effects can be as realistic as possible, Proto-Sound 2.0 disables the reversing unit whenever PSA is enabled. This way the engine remains still at its stop as the operator cycles through the PSA sequences. |
| When the PSA enters its last sequence the bell automatically comes on. | PSA is programmed to start ringing the bell at that point. After approximately 12 rings of the bell, it will automatically turn off. |
| When PSA is enabled, pressing the whistle and bell buttons has no effect. | Because PSA must control various effects in each sequence, Proto-Sound 2.0 takes control of these sound effects until you exit PSA. |
| I push the direction button but the next sound clip in the sequence does not play or the engine does not come out of PSA after fourth press of the direction button. | Each PSA clip must play for approx. 30 seconds before PSA will advance to the next step in the PSA cycle. Wait at least 30 seconds in each PSA sound clip before pressing the direction button. |

## Compatibility

This engine will operate on any traditional O-31 Gauge track system, including M.T.H.'s RealTrax® or ScaleTrax™ or traditional tubular track. It is also compatible with most standard AC transformers. (See page 22 for a complete list of compatible transformers and wiring instructions.)

OPERATING INSTRUCTIONS

# Transformer Compatibility and Wiring Chart

Proto-Sound 2.0 is designed to work with most standard AC transformers. The chart below lists the many compatible transformers. Note that many of the operational commands described in these instructions require a bell button, so if your transformer does not have its own bell button, you should consider adding one to get the full benefit of the system. In addition, the chart details how the terminals on these transformers should be attached to your layout.

| Transformer Model | Center Rail | Outside Rail | Min/Max. Voltage | Power Rating | Transformer Type |
|---|---|---|---|---|---|
| MTH Z-500 | Red Terminal | Black Terminal | 0-18v | 50-Watt | Electronic |
| MTH Z-750 | Red Terminal | Black Terminal | 0-21v | 75-Watt | Electronic |
| MTH Z-4000 | Red Terminal | Black Terminal | 0-22v | 390-Watt | Electronic |
| Lionel 1032 | U | A | 5-16v | 90-Watt | Standard |
| Lionel 1032M | U | A | 5-16v | 90-Watt | Standard |
| Lionel 1033 | U | A | 5-16v | 90-Watt | Standard |
| Lionel 1043 | U | A | 5-16v | 90-Watt | Standard |
| Lionel 1043M | U | A | 5-16v | 90-Watt | Standard |
| Lionel 1044 | U | A | 5-16v | 90-Watt | Standard |
| Lionel 1053 | U | A | 8-17v | 60-Watt | Standard |
| Lionel 1063 | U | A | 8-17v | 60-Watt | Standard |
| All-Trol | Left Terminal | Right Terminal | 0-24v | 300-Watt | Electronic |
| Dallee Hostler | Left Terminal | Right Terminal | | | Electronic |
| Lionel LW | A | U | 8-18v | 75-Watt | Standard |
| Lionel KW | A or B | U | 6-20v | 190-Watt | Standard |
| Lionel MW | Outside Track Terminal | Inside Track Terminal | 5-16v | 50V.A. | Electronic |
| Lionel RS-1 | Red Terminal | Black Terminal | 0-18v | 50V.A. | Electronic |
| Lionel RW | U | A | 9-19v | 110-Watt | Standard |
| Lionel SW | U | A | Unknown | 130-Watt | Standard |
| Lionel TW | U | A | 8-18v | 175-Watt | Standard |
| Lionel ZW | A,B,C or D | U | 8-20v | 275-Watt | Standard |
| Lionel Post-War Celebration Series ZW | A,B,C or D | Common | 0-20v | 135/190 Watt | Electronic |

*** Conventional Mode Only**

# Additional Features Accessible with the DCS Remote Control System:

While conventional mode operation of a Proto-Sound 2.0 engine yields wonderfully realistic sound and several train control features, command mode operation allows the user to access a world of command functions never before accessible to O Gauge railroaders.  With the addition of the DCS Remote Control System (including a DCS remote handheld and Track Interface Unit) users gain many advanced features, including:

• DCS Proto-Speed Control - Establishes desired locomotive speed in scale miles per hour increments via a thumbwheel control and allows operator to set maximum speed and acceleration/deceleration rates

• ProtoSmoke® Variable Output Control - Controls how much smoke each engine outputs and matches smoke to locomotive speed

• Locomotive Lighting Control - Controls locomotive headlights, marker and interior lights, beacon lights, ditch lights, and MARS lights

• Emergency Stop-Single button push stops all Proto-Sound 2.0 trains but does not turn off the power

• One Touch Global Mute/UnMute-Single button mutes or unmutes all DCS-controlled locomotives' user-defined actions, including sound, lights, and smoke

• Proto-Dispatch Operation-Public Address-like feature allows users to speak through locomotive speaker during operation

• Proto-Cast-Allows users to play audio recordings through locomotive speaker during operation

• Proto-Doppler Sound Effects Set Up-Users can configure locomotive for Doppler Operation, including setting distance points for Doppler start, repeat, and stop modes

• Independent Volume Control of Engine Sounds, Bell, Horn & Whistle for each Locomotive

• Control up to 50 different DCS-Equipped Locomotives at one time with multiple TIUs

• Proto-Effects™ Set Up-User can select individual Proto-Effects™ operations to be active or inactive, including cab chatter, train wreck sounds, coupler sounds, and wheel clickety-clack sounds

• Direction Control Set Up-User can set initial individual start-up direction (start in forward or reverse) for double-heading operations

• Locomotive Consist Set-up-User can determine locomotive values for consist make-ups, allowing multiple locomotives belonging to a consist to operate together

• Query Locomotive Information-User can query locomotive programming to learn locomotive address and engine data information, including scale miles traveled

• User Can Query, Set and Operate Track and Accessory Interface Units for Programming Digital Command Operations for up to 250 Accessories and 250 Individual Switches

• User Can Script, Record and Playback Train Routes

Operating instructions for all DCS Command features will accompany the DCS remote control equipment.

# CAUTION: Electrically Operated Product:

**Not recommended for children under 10 years of age. M.T.H. recommends adult supervision with children ages 10 - 16. As with all electric products, precautions should be observed during handling and use to reduce the risk of electric shock.**

WARNING: When using electrical products, basic safety precautions should be followed including the following:

- Read this manual thoroughly before using this device.

- M.T.H. recommends that all users and persons supervising use examine the hobby transformer periodically for conditions that may result in the risk of fire, electric shock, or injury to persons, such as damage to the primary cord, plug blades, housing, output jacks or other parts. In the event such conditions exist, the transformer should not be used until properly repaired.

- As with all electrical appliances, this product should not be left in operation when unattended.

# Service & Warranty Information

## How to Get Service Under the Terms of the Limited One-Year Warranty

When you suspect an item is defective, please check the operator's manual for standard operation and trouble-shooting techniques that may correct the problem. Additional information may be found on the M.T.H. Website. Should you still require service, follow the instructions below to obtain warranty service.

First, e-mail, write, call or fax a M.T.H. Authorized Service Center (ASC) in your area to obtain Repair Authorization. You can find the list of ASCs on the M.T.H. Website, www.mth-railking.com. Authorized Service Centers are required to make warranty repairs on items sold *only* from that store; all other repairs may-- or may not be done at the store's own discretion. If you did not purchase the item directly from the ASC, you will need to select a National Authorized Service Center (NASC). These centers are compensated by M.T.H. to perform warranty service for any customer whose repair qualifies for warranty service. A list of NASC retailers can be located on the M.T.H. Website or by calling 1-888-640-3700. Should the warranty no longer apply, you may choose either an ASC or NASC retailer to service your M.T.H. Product. A reasonable service fee will be charged.

CAUTION: Make sure the product is packed in its original factory packaging including its foam and plastic wrapping material to prevent damage to the merchandise. There is no need to return the entire set if only one of the components is in need of repair *unless otherwise instructed by the Service Center*. ***The shipment must be prepaid and we recommend that it be insured. A cover letter including your name, address, daytime phone number, e-mail address (if available), Return Authorization number (if required by the service center, a copy of your sales receipt and a full description of the problem must be included to facilitate the repairs. Please include the description regardless of whether you discussed the problem with a service technician when contacting the Service Center for your Return Authorization.***

Please make sure you have followed the instructions carefully before returning any merchandise for service. Authorized M.T.H. Service Centers are independently owned and operated and are not agents or representatives of M.T.H. Electric Trains. M.T.H. assumes no responsibility, financial or otherwise, for material left in their possession, or work done, by privately owned M.T.H. Authorized Service Centers.

If you need assistance at any time email MTH Service at service@mth-railking.com, or call 410 381-2580.

# Limited One-Year Warranty

**All M.T.H. products purchased from an Authorized M.T.H. Train Merchant are covered by this warranty.**

See our website at **www.mth-railking.com** or call 1-888-640-3700 to identify an Authorized M.T.H. Train Merchant near you.

M.T.H. products are warrantied for one year from the date of purchase against defects in material or workmanship, excluding wear items such as light bulbs, pick-up rollers, batteries, smoke unit wicks, and traction tires. We will repair or replace (at our option) the defective part without charge for the parts or labor, if the item is returned to an M.T.H. Authorized Service Center (ASC) or M.T.H. National Authorized Service Center (NASC) within one year of the original date of purchase. This warranty does not cover damages caused by improper care, handling, or use. Transportation costs incurred by the customer are not covered under this warranty.

Items sent for repair must be accompanied by a return authorization number, a description of the problem, and **a copy of the original sales receipt from an Authorized M.T.H. Train Merchant**, which gives the date of purchase. If you are sending this product to an Authorized Service Center, contact that Center for their return authorization.

This warranty gives you specific legal rights, and you may have other rights that vary from state to state. Specific questions regarding the warranty may be forwarded to M.T.H. directly.

Service Department
M.T.H. Electric Trains
7020 Columbia Gateway Drive
.Columbia MD 21046-1532

MTH ELECTRIC TRAINS

AUTHORIZED SERVICE CENTER

7020 Columbia Gateway Dr. - Columbia, MD 21046
Information: 410-381-2580 Fax: 410-381-6122
www.mth-railking.com

# PARTICIPATING N.A.S.C. RETAILER LIST

**CANADA**
TOY TRAIN WORKSHOP
CUMBERLAND
613-833-8331

THE TRAIN ROOM
FERGUS
519-787-3280

**CALIFORNIA**
TIN PLATE JUNCTION
OAKLAND
510-444-4780

**COLORADO**
MIZELL TRAINS INC
WESTMINSTER
303-429-4811

**CONNECTICUT**
NEW ENGLAND HOBBY SUPPLY
MANCHESTER
860-646-0610

**FLORIDA**
ROUNDHOUSE SOUTH
PORT ORANGE
386-304-7002

**MARYLAND**
PLAZA HOBBY
CUMBERLAND
301-729-6424

ENGINE HOUSE HOBBIES
GAITHERSBURG
301-590-0816

CATOCTIN MOUNTAIN TRAINS & HOBBIES
THURMONT
301-694-8331

**MICHIGAN**
MICHIGAN MODEL TRAIN CENTER
PINCKNEY
734-426-1651

BRASSEUR ELECTRIC TRAINS INC.
SAGINAW
989-793-4753

**NEW HAMPSHIRE**
TREASURED TOYS
SALEM
603-898-7224

**NEW YORK**
AURORA RAILS & HOBBIES
EAST AURORA
716-652-5718

**OHIO**
DAVIS ELECTRONICS
MILFORD
513-831-6425

RICK'S TOY TRAINS
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419-478-0171

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AMBLER
215-628-2366

FAIRCHANCE PHARMACY
FAIRCHANCE
724-564-7817

TOBY TYLER'S HOBBY CENTER
PITTSBURGH
412-653-5030

**VIRGINIA**
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LOCUST GROVE
540-854-8955

DAVIS HOBBY SUPPLIES
PORTSMOUTH
757-397-1983

T S G HOBBIES
WARRENTON
540-347-9212

**WISCONSIN**
SOMMERFELD'S TRAINS
BUTLER
262-783-7797

GRAMPA'S TRAIN SHOP
RICE LAKE
715-234-2996

MTH ELECTRIC TRAINS

AUTHORIZED SERVICE CENTER

7020 Columbia Gateway Dr. - Columbia, MD 21046
Information: 410-381-2580 Fax: 410-381-6122
www.mth-railking.com

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613-833-8331

THE TRAIN ROOM
ERGUS
519-787-3280

CREDIT VALLEY RAILWAY COMPANY
STREETSVILLE
905-826-1306

B H TRAINS
TERREBONNE
450-492-0317

**ALABAMA**

SOUTHERLAND STATION
HUNTSVILLE
256-533-4720

LIL' BOBBY'S HOBBIES
MONTGOMERY
334-277-1715

**ARIZONA**

ARIZONA TRAIN DEPOT
MESA
480-833-9486

**CALIFORNIA**

CENTRAL COAST TRAINS
ATASCEDERO
805-466-1391

TRAIN SHACK
BURBANK
818-842-3330

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NORTH HOLLYWOOD
818-769-0403

DOLLHOUSES TRAINS & MORE
NOVATO
415-883-0388

TIN PLATE JUNCTION
OAKLAND
510-444-4780

RON'S WORLD
SAN CLEMENTE
949-361-5596

TRUCKS & TRAINS HOBBIES
SANTA ROSA
707-537-6586

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CUSTOM RAILWAY SUPPLY
COLORADO SPRINGS
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CABOOSE HOBBIES
DENVER
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MIZELL TRAINS
WESTMINSTER
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HOLLYWOOD STATION
HOLLYWOOD
954-921-2700

DEPOT HOBBY SHOP
LAKE WORTH
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READY TO ROLL
MIAMI
305-688-8868

FRANK'S TRAINS & HOBBIES
OLDSMAR
813-855-1041

COLONIAL PHOTO & HOBBY
ORLANDO
407-841-1485

WARRICK CUSTOM HOBBIES
PLANTATION
954-370-0708

ROUNDHOUSE SOUTH
PORT ORANGE
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**ILLINOIS**

BIKE & CHOO CHOO CONNECTION
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847-882-7728

**INDIANA**

Y. O. R. K. TRAINS
MUNSTER
219-838-9999

SAMUELSON'S TRAIN SHOP
VALPARAISO
219-462-2708

**IOWA**

CABOOSE STOP HOBBIES
CEDAR FALLS
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AMERICA'S TRAIN YARD
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HOBBYTOWN U S A
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CATOCTIN MOUNTAIN TRAINS & HOBBIES
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609-567-8490

GRAND CENTRAL STATION
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856-414-0092

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732-583-0505

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CLEARVIEW TRAIN & HOBBY
LORAIN
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NUTBUSH EXPRESS
VICTORIA
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G B T V & TRAINS
GREEN BAY
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